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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,666	01/08/2002	Nianci Han	003330	6183

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USA/ETCH/METAL/JB

EXAMINER

LAVILLA, MICHAEL E

ART UNIT

PAPER NUMBER

1775

DATE MAILED: 12/29/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/042,666

Applicant(s)

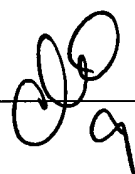
HAN ET AL.

Examiner

Michael La Villa

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) 11-28, 39-42 and 44-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 29-37, 43 and 47-57 is/are rejected.
- 7) ☒ Claim(s) 38 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) g.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Election/Restrictions

1. Applicant's election of Group I, Claims 1-10, 28-38, 43, and 47, in Paper No. 7 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

3. Claims 54 and 55 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Applicant has argued that "metal structure having an integral surface coating" requires a lack of discrete boundary between the coating and structure. Hence, it is unclear how the stated requirement of Claims 54 and 55 further limits the respective independent claims.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:
5. The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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6. Claims 1, 2, 5-10, 29, 30, 33, 35, 47, and 54-57 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding Claims 1, 2, 5-10, 29, 30, 33, 35, 47, and 54-57, it is unclear what are the relied upon portions for teaching in the originally filed Specification that the processing chamber component may comprise a metal structure having an integral surface coating.
7. The following is a quotation of the second paragraph of 35 U.S.C. 112:
 8. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
 9. Claims 1, 2, 5, 8, 29, 30, 33, 43, 47, and 51-56 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
 - I. Regarding Claims 1, 2, 5, 8, 29, 30, 33, 43, 47, 51, 52, and 56, it is unclear what is meant by the phrase "integral surface coating" for the reasons of record in the Office Action mailed on 9 July 2003. Applicant's traversal recites a definition for this term and argues that this term has been defined by paragraph 25 of the Specification. However, paragraph 25 does not appear to explicitly define this phrase to have the argued for definition.

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- II. Regarding Claims 2, 30, and 52, it is unclear what is meant by the phrase "anodized coating" for the reasons of record in the Office Action mailed on 9 July 2003. Applicant argues that paragraph 37, which teaches exposure to oxygen gas to obtain an anodized coating, does not contradict the commonly understood requirement of electrolytic action to obtain anodized coatings. However, paragraph 37 teaches that the entire anodized coating may be obtained by exposure to oxygen gas, with the rate of formation influenced not by electrolytic parameters, but rather by oxygen purity levels and substrate temperature. It therefore remains unclear whether the claimed anodized coating requires electrolytic action in its formation.
- III. Regarding Claims 54 and 55, it is unclear what is meant by the phrase "is absent a discrete boundary between the coating and the metal substrate." Does "is absent" mean "lacks"? It is unclear how this limitation is further limiting of an "metal structure having an integral surface coating," which applicant has argued means absence of discrete boundary between the coating and metal structure.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

11. A person shall be entitled to a patent unless –

12. (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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13. (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
14. (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
15. Claims 1-3, 5, 6, 8, 43, 56, and 57 are rejected under 35 U.S.C. 102(a and e) as being anticipated by Jackson et al. USP 6,287,644 for the reasons of record in the Office Action mailed on 9 July 2003.
16. Claims 1-3, 5, 6, 8, 56, and 57 are rejected under 35 U.S.C. 102(b) as being anticipated by Goward USP 3,758,903 for the reasons of record in the Office Action mailed on 9 July 2003.
17. Claims 1-5, 8, 56, and 57 are rejected under 35 U.S.C. 102(b) as being anticipated by Aguero et al. USP 5,807,613 for the reasons of record in the Office Action mailed on 9 July 2003.
18. Claims 1-8, 54, 56, and 57 are rejected under 35 U.S.C. 102(e) as being anticipated by Morita et al. USPA 2002/0012791 for the reasons of record in the Office Action mailed on 9 July 2003.
19. Claims 1-10, 54, 56, and 57 are rejected under 35 U.S.C. 102(e) as being anticipated by Murakawa et al. USP 6,447,937 for the reasons of record in the Office Action mailed on 9 July 2003.

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Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

21. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

22. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goward USP 3,758,903 for the reasons of record in the Office Action mailed on 9 July 2003.

23. Claims 9, 10, 36, 37, and 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson et al. USP 6,287,644 for the reasons of record in the Office Action mailed on 9 July 2003.

24. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agüero et al. USP 5,807,613 for the reasons of record in the Office Action mailed on 9 July 2003.

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25. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita et al. USPA 2002/0012791 for the reasons of record in the Office Action mailed on 9 July 2003.

26. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakawa et al. USP 6,447,937. Murakawa teaches a YAG coated sapphire substrate support used in a processing chamber, wherein the YAG is plasma resistant. See Murakawa (Abstract; Figure 6; col. 3, line 58 through col. 4, line 13; Table 1; col. 13, lines 59-62; col. 21, line 21 through col. 22, line 5). The window functions as part of the wall of the apparatus. Murakawa may not exemplify coating a sapphire window substrate, but does disclose that sapphire windows are effective substrates. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a sapphire substrate rather than a glass substrate as Murakawa teaches that effective articles may be comprised of a sapphire substrate. Sapphire, comprised of aluminum, has a metal structure.

27. Claims 29-35 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hollars USP 6,395,010 in view of Morita et al. USPA 2002/0012791 for the reasons of record in the Office Action mailed on 9 July 2003.

28. Claims 29-35 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hollars USP 6,395,010 in view of Murakawa et al. USP 6,447,937 for the reasons of record in the Office Action mailed on 9 July 2003. Moreover, when not using a YAG window substrate, Murakawa may not exemplify coating a

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sapphire window substrate, but does disclose that sapphire windows are effective substrates. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a sapphire substrate as Murakawa teaches that effective articles may be comprised of a sapphire substrate. Sapphire, comprised of aluminum, has a metal structure.

29. Claims 1, 2, 6-10, 29, 30, 34, 35, 56, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuki USPA 2001/0003271. Otsuki teaches applying alumina/yttria, including YAG, protective coatings on substrate processing chamber surfaces. See Otsuki(Abstract; Figures 1, 3, 19, and 23; paragraphs 13-15, 42-45, 62, 118; and Claims). Otsuki may not exemplify substrate processing chambers comprised of metal, but does teach that such chambers may be comprised of metal. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a substrate processing chamber comprised of metal for applying the coatings of Otsuki as Otsuki teaches that such chambers are effective for processing substrates. The bonded protective coating on the metal structure chamber surface forms an integral coating.

Response to Amendment

- I. In view of applicant's amendments and arguments, applicant traverses the section 112, second paragraph rejections of the Office Action

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mailed on 9 July 2003. Rejections are withdrawn except as repeated above for the reasons given above in response to applicant's traversal.

II. In view of applicant's amendments and arguments, applicant traverses the section 102 and 103 rejections over Goward of the Office Action mailed on 9 July 2003. Applicant argues that there is no teaching of a substrate processing chamber component. However, the substrate to be coated is such a component, and so the argument is not persuasive. Moreover, an engine environment may be considered a substrate processing chamber. Applicant argues that the coating is not integral, but applicant's definition of integral would appear to encompass a bonded coating, which Goward teaches. Hence, rejections are maintained.

III. In view of applicant's amendments and arguments, applicant traverses the section 102 and 103 rejections over Jackson of the Office Action mailed on 9 July 2003. Applicant argues that there is no teaching of a substrate processing chamber component. However, the substrate to be coated is such a component, and so the argument is not persuasive. Moreover, an engine environment may be considered a substrate processing chamber. Applicant argues that the coating is not integral, but applicant's definition of integral would appear to

encompass a bonded coating, which Jackson teaches. Applicant argues that the coating must be able to withstand plasma exposure, which property would appear to be achieved in view of the resistant nature of the coatings of Jackson and the absence of exposure requirement that necessarily could not be met by Jackson. There is no stated requirement of the presence of a plasma. Hence, rejections are maintained.

- IV. In view of applicant's amendments and arguments, applicant traverses the section 102 and 103 rejections over Aguero of the Office Action mailed on 9 July 2003. Applicant argues that there is no teaching of a substrate processing chamber component. However, the substrate to be coated is such a component, and so the argument is not persuasive. Moreover, an engine environment may be considered a substrate processing chamber. Applicant argues that the coating of Aguero is not disclosed as being resistant to various environments commonly found in a processing chamber, rendering application of the coatings of Aguero on a processing chamber component non-obvious. Applicant's arguments are not germane to the obviousness of using the coated substrates of Aguero as a turbine component as alleged as obvious in the rejection. Hence, rejections are maintained.

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- V. In view of applicant's amendments and arguments, applicant traverses the section 102 and 103 rejections over Morita of the Office Action mailed on 9 July 2003. Applicant argues that Morita does not disclose a metal structure component, but rather a ceramic structure. However, aluminum in the ceramic is metal, and so the rejection is maintained.
- VI. In view of applicant's amendments and arguments, applicant traverses the section 102 rejection over Murakawa of the Office Action mailed on 9 July 2003. Applicant argues that Murakawa teaches a ceramic component, not a component of a metal structure. Applicant argues that Murakawa does not teach an integral coating lacking a discrete interface. A YAG component having a YAG integral surface coating would be indistinguishable from the YAG windows disclosed by Murakawa where the absence of a boundary layer defines an integral coating. A YAG component comprises metal, thereby teaching the claimed metal structure limitation. Applicant's response points to the obviousness of coating YAG on sapphire, which contains aluminum metal. Such a coated substrate may possess a boundary layer, but by being bonded would meet the requirement of integral coating as most broadly interpreted. Hence, rejection is maintained.

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VII. In view of applicant's amendments and arguments, applicant traverses the section 103 rejection over Hollars in view of Morita of the Office Action mailed on 9 July 2003. Applicant argues that Morita does not teach a metal structure substrate, but this argument is addressed above in the discussion of the rejection over Morita, and so the rejection is maintained.

VIII. In view of applicant's amendments and arguments, applicant traverses the section 103 rejection over Hollars in view of Murakawa of the Office Action mailed on 9 July 2003. Applicant argues that Murakawa does not teach a metal structure substrate or an integral coating. These arguments are addressed above in the discussion of the rejection over Murakawa. Hence, rejection is maintained.

Allowable Subject Matter

30. Claim 51 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

31. Claims 52 and 53 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

32. The subject matter of Claims 51-53 is not taught or suggested by the reviewed prior art and by the prior art of record. Particularly, the processing chamber

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apparatus having a gradient composition of yttrium-aluminum oxide is not taught or suggested.

33. Claim 38 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

34. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

35. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael La Villa whose telephone number is

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(703) 308-4428. The examiner can normally be reached on Monday through Friday.

37. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (703) 308-3822. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

38. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Michael La Villa
December 24, 2003

